DOCUMENT RESUME

ED 176 777 IR 007 732

AUTHOR Fabian, Emily
TITLE Computerized Literature Searching: An Orientation for the Search Requestor.
INSTITUTION Rutgers, The State Univ., New Brunswick, N.J. Graduate School of Education.
PUB DATE Aug 79
NOTE 39p.; Some examples will not reproduce well because of small size and/or quality of type

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Data Bases; Indexing; *Information Retrieval; *Information Seeking; Information Services; Information Sources; Interviews; *On Line Systems; Research Problems; *Search Strategies
IDENTIFIERS *Question Negotiation

ABSTRACT

Developed to orient the information seeker to the computerized literature search process, this guide provides background information that will help the user facilitate the search interview and the formation of a search topic, enabling him or her to focus on personal search needs and not on the fundamentals of online searching. Major purposes for which researchers have made requests to retrieve online information are described, as are types of search objectives and instances in which a manual search may be effective. To aid the searcher in choosing the proper database, the differences between kinds of databases, their locations, and methods of determining their appropriateness are outlined. It is suggested that the searcher define his research problem by recognizing concepts and using a thesaurus. This guide also explains the principles of Boolean logic, presents a sample search, and considers such details as deciding the format of the output or citations requested from the system, estimating the cost of the search, and judging whether the turnaround time from search to receipt of information is affordable. In addition to samples of typical interview questions and a sample of a search topic form, a listing of indexing and abstracting sources is provided. (FM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED176777

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

COMPUTERIZED LITERATURE SEARCHING

An Orientation for the Search Requestor

BEST COPY AVAILABLE

Emily Fabiano

August, 1979

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Emily Fabiano

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

IR007732

Distributed Through Buros Bibliographic Search Service

Oscar K. Buros Learning Resource Center
Graduate School of Education
Rutgers University
New Brunswick, N. J.

ACKNOWLEDGEMENTS

Reproduction of illustrations and diagrams on the following pages were made from training and promotional materials produced by Lockheed/DIALOG Information Systems:

SEARCHER AT TERMINAL, p. 14
INFORMATION RETRIEVAL PROCESS, p. 12

The Database Catalog, included with this material is also a product of:

Lockheed Information Systems
Orgn. 5208, Bldg. 201
3251 Hanover Street
Palo Alto, California 94304

TABLE OF CONTENTS

		Page
I.	When to Request a Computer Search	1
	a. Research Funded Proposal (RFP)	1
	b. Developing a Dissertation Proposal	2
	c. Supporting Thesis or Dissertation Research	3
	d. Bibliography for a Research Paper	4
	e. Computer or Manual Search	4
II.	Type of Search Objective	6
III.	Choosing a Database	7
	a. Creation of Databases	7
	b. Differences in Databases	9
	c. Location of the Databases	11
	d. Calling Up California by Computer	12
	e. Appropriate Databases for You	12
IV.	Defining the Research Problem	15
	a. Recognizing Concepts	15
	b. Using a Thesaurus	17
V.	The Search Strategy	18
	a. Boolean Logic	19
	b. Search Sample	21
VI.	Search Details	23
	a. Print-out Formats	23
	b. Search Costs	23
	c. Time-frame for Search	23
	d. Getting the Documents	25
VII.	Review	26
VIII.	Appendix: Indexing and Abstracting Sources	28

When To Request A Computer Search

Major purposes for which researchers have made requests to retrieve information by computer are:

1) to support Research Funded Proposals (RFP);

2) to develop dissertation proposals;

3) to support thesis or dissertation research in progress;

4) to develop bibliographies for research papers.

◀READ THE SECTION BELOW WHICH REFERS TO YOUR REQUEST AS #1, 2, 3 OR 4

Research Funded Proposal

A computerized literature search can be appropriate at different stages in the RFP process:

- When first considering a topic for research and subsequent funding, the computer search can provide you with a limited background of information through a briefsearch on the topic or a comprehensive list of references on the topic. With some applications for funding, a literature search by computer is obligatory.

- The cost for the search is initially assumed by the requestor or applicant. Be sure to include a budget item to cover the search, should your proposal be accepted; you can then be re-funded for your search.

- Once your RFP is accepted and you have budgeted funds for a computerized literature search (or not) a comprehensive, retrospective search should be requested, covering all aspects of your topic.

- When the funded research year is drawing to a close and there are still some unexpended funds, a computerized search might legitimately be considered.

- You may seek re-funding for your proposal based on some new discoveries through the research you conducted. A computerized literature search in this new area would facilitate your application for renewal of funds.

Developing A Dissertation Proposal

If you are beginning the literature search into a topic you are proposing for your dissertation research, you will be discouraged from conducting a computerized search and encouraged to delay that search, if one of the following is true:

- You have not done any searching manually, in books, Education Index, ERIC or some other appropriate information tools.

  SUGGESTION: Do some searching manually first, to acquaint yourself with all facets of the topic, with prominent researchers in that field. You will pick up information that the computer may not, since it is effective in doing only what it is told to do under specific commands or concepts. For some suggestions on what resources to use for searching manually see the Appendix.

- You have not had your topic confirmed or been given the "go-ahead" by your chairperson/ advisor.

  SUGGESTION: Save your money at this point. Submitting one draft of your proposal to your chairperson is not a guarantee that you will definitely be pursuing that topic. Have your search done when you feel you have gotten sufficient approval to proceed. A rule of thumb might be when you begin to collect your committee members or even when that committee has been finally formed. You would then have an exhaustive search completed on your topic and most likely it will not change direction as could occur when you have a search completed too soon.

•You have not refined or limited your topic. "Open education" or "counseling high-school students" needs to be further refined. A huge number of postings or citations would occur if these terms were fed into the computer; too many to handle and too costly.

SUGGESTION: Further discussions with your chairperson and some additional searching manually, particularly into recent developments in your topic, would be necessary. The section under "Defining the research problem", page 15 is important for you.

◀ IF YOUR RESEARCH STATUS IS DESCRIBED AS ONE OF THE THREE SITUATIONS ABOVE, DO NOT CONTINUE THROUGH THE REST OF THE MATERIAL NOW. PLEASE FOLLOW THE APPROPRIATE SUGGESTION.

Anyone can insist that their search request be honored. In that case, a briefsearch in an inexpensive database like ERIC could be completed for approximately $15-25, depending on the final number of citations found.

If you have a firm approval to continue with your proposal topic and have done some searching manually, you are a prime candidate for an on-line search.

◀ CONTINUE THROUGH THE REST OF THE MATERIAL, BEGINNING WITH "COMPUTER OR MANUAL SEARCH" PAGE 4.

Supporting Thesis or Dissertation Research

Once your thesis or dissertation proposal is accepted and your research is in progress, you may want a computerized literature search that is:

- Retrospective and exhaustive in nature and will uncover citations to most of the research on your topic. This would supplement the research you've done manually and would, in essence, verify what you may have found or missed. For instance, Dissertation Abstracts should be searched to see that you are not duplicating other dissertation research.

- An update of the research available on your topic from a certain point in time. For instance, you may have conducted an exhaustive search on this topic up to 1975 and would like to update information since 1975.

- Completed on a facet of your topic that was not searched manually although you did search comprehensively on the major concepts of your topic.

◀ IF YOUR RESEARCH STATUS WAS JUST DESCRIBED, GO TO "COMPUTER OR MANUAL SEARCH", BELOW.

Bibliography for a Research Paper

Some students have requested a computerized literature search to assist them in developing the bibliography for a research paper or project for required course assignments. A brief-search in a database would be sufficient.

◀ PLEASE CONTINUE.

I. Computer or Manual Search

The computerized literature search is not always the best approach to searching the literature. Some instances when computerized or manual searching may be most appropriate:

1) A topic that may be relatively simple or very specific could be searched quickly, manually, as well as by the computer.

Example: A particular author's research
Bibliotherapy
Declining enrollment

If the database uses these as searchable terms the computer will perform exactly the same search you do manually.

2) When a topic is multi-faceted and requires searching and combining several concepts, then the computer is saving you considerable time and the expense will be worth it.

Examples: a) What kinds of educational programs are available to health professionals in the field? How effective are they?

b) Are there any effects on the achievement level of students who often transfer within and out of school districts?

You would have to search several concepts, separately, for each topic--

a	b
Continuing education	Student Mobility
Professionals	Achievement
Health	Relocation
Program evaluation	Transfer students

3) If you need a comprehensive, retrospective search of the literature, the computer search is somewhat more reassuring than having searched your topic manually, only.

4) The computer can perform what is called "text searching". The titles and abstracts of the citations contained in a database can be searched as well as the descriptor or subject terms.

You may be searching a topic for which there is no descriptor or subject term, yet you know that the topic is best searched as is and not subsumed under another concept.

Example: Are the eating habits of very young children affected by the mother's attitudes toward feeding time?

Concepts searched--
Eating habits
Preschool
Mother attitudes
Nutrition instruction

Some citations were produced combining these terms but the more effective strategy was to search the text of the abstracts in ERIC under "preschool (C) feeding" which directs the computer to look for these two words anywhere in the abstract.

Finally, using the computer lessens the possibility of finding interesting and related material that you might "stumble on" in a manual search.

If you are unfamiliar with the indexing and abstracting tools that you would search manually to find information, use the Appendix to select some appropriate resources. You may have to ask for some assistance in locating and using these sources in the library.

◀PLEASE CONTINUE WITH PART II IF YOU ARE STILL REQUESTING A COMPUTER SEARCH.

II. Type of Search Objective

You should decide what type of search objective you want to achieve.

Do you need a high recall search?

If so, you want to retrieve everything on your topic; for dissertation research, this is necessary. A certain amount of nonrelevant or marginally relevant material will be found in the output.

Do you need a high precision search?

If so, you want to retrieve much relevant material, with fewer nonrelevant items. You will have to be very specific with your concepts and descriptors.

Do you need a briefsearch?

If so, you want to retrieve a few items at less expense yet enough information for you to begin your research; a more comprehensive search would be completed at a later date.

All three types of search are retrospective, recovering information from earlier years, unless you impose a certain date limit on your topic.

Clarify your search objective before coming to the interview.

◀ PLEASE CONTINUE WITH PART III.

III. Choosing a Database

A very important consideration at this point is to select the appropriate database(s) to search. You will need to know, first, what a database is.

Creation of Databases

Unless you have just arrived from a prolonged stay on a desert island, you are aware of the tremendous growth in publication activity over the last ten years. The numbers of books and monographs produced each year is substantial; these numbers are small, however, in comparison to the millions of journal, newspaper and other periodical articles and research reports produced yearly.

Consider the existence of some 500 serials published in education, 900 in psychology and 1200 in sociology as just

An example of numbers in three fields of study. If each of the serials in education contains at least ten articles per issue, how do you deal with

	500	journals
x	12	issues
x	10	articles
OR 60,000		articles per year

to find information on a specific topic in education?

Over these last 20 years, organizations and publishers have created indexing and abstracting services which produce periodic abstract and index type publications to journals, serials, dissertations, research reports, etc. These services, like the American Psychological Association, Wilson Publishing Company, have a staff that examines periodicals, dissertations, etc. weekly or monthly. Each of the articles or documents is assigned to subject areas and entered into the monthly or periodic indexes that are published by that service. When you go to look up particular subjects in these, printed, paper indexes, you are referred to the articles or documents that deal with that subject area. Some of these services also produce monthly abstracting journals which contain abstracts for each of the items indexed in the system.

Two of these printed, abstracting and indexing services are pictured below.

At some point, it became economical for these services to use computer generated tapes to produce these abstract and index publications since they are updated periodically as new material is written and published. Although those tapes were designed for information storage the producers began to process the tapes and put them in a form that could be used for retrieval and searching for information, not only for storage. This "database" approach makes the information available for a wide variety of purposes.

Differences in Databases

There are some 100 databases that are searchable, on-line. Many are never used in social science searches since they are not social science oriented: WELDA SEARCH, OCEANIC ABSTRACTS.

The information stored on each of the databases differs in two respects:

1) The method for classifying and categorizing each citation or record (each reference contained in the database is called a record).

2) The amount of information contained in a record.

To illustrate these differences, a comparison is made between the indexing system of DISSERTATION ABSTRACTS and PSYCHOLOGICAL ABSTRACTS and the records available in those databases.

DISSERTATION ABSTRACTS uses a keyword indexing system. Every dissertation submitted for entry into this system (printed and computerized as well) is indexed by the "keywords" in the title and the very broad subject categories like "Educational Administration" and "Educational Psychology". The dissertation is abstracted and entered in the system.

Example: "The relationship between cognitive complexity and leadership style in school superintendents." This dissertation can be found in the system under the seven keywords underlined. DISSERTATION ABSTRACTS must be searched by keywords on-line as well as in the printed indexes. Searching manually, you would have to look-up each of these terms separately and then try to combine them, somehow. The computer does the same in far less time!

When you search DISSERTATION ABSTRACTS manually, you are led to an abstract of the dissertation which you then locate and read. Only the bibliographic information (author, title, location) is available on-line. You still have to locate the abstract manually to read it. Below is a sample of the record produced for this dissertation.

298180 ORDER NO: 68-05270
THE RELATIONSHIP BETWEEN COGNITIVE COMPLEXITY AND LEADERSHIP STYLE IN SCHOOL SUPERINTENDENTS. 143 PAGES.
KELLEY, WILBUR ROBERT, JR. (ED.D. 1967 STATE UNIVERSITY OF NEW YORK AT ALBANY).
PAGE 4910 IN VOLUME 28/12-A OF DISSERTATION ABSTRACTS INTERNATIONAL.
EDUCATION, PSYCHOLOGY

With this information the requestor located the abstract for the record in DISSERTATION ABSTRACTS INTERNATIONAL, pg. 4910, Vol. 28A.

•PSYCHOLOGICAL ABSTRACTS uses a subject term indexing system or descriptors. An article is assigned certain descriptors and entered into the system under those terms which are searched on-line as well as manually.

Example: "Counselor characteristics and effectivenss in serving economically disadvantaged and advantaged males." This article or record could be found under these subject terms: Educational Counseling, Counselor Characteristics, Disadvantaged, Junior High School Students, High School Students, Human Males.

In this system, abstracts are available on-line as well as in the printed indexes. The complete record for this reference on-line is shown below, and on the next page.

DOC YEAR: 1974 VOL NO: 52 ABSTRACT NO: 04119
Counselor characteristics and effectiveness in serving economically disadvantaged and advantaged males.
Shelton, Judith E.
Oklahoma State U., Stillwater
Counselor Education & Supervision 1973 Dec Vol. 13(2) 120-126
CLASSIFICATION: 16

• • • •

• • • •

Compared the personality characteristics of 60 male and female counselors serving economically disadvantaged and advantaged males in junior and senior high schools using the 16 PF. A Counseling Evaluation Inventory composite client-rating score, derived from 7 male clients and determined for each counselor, was the effectiveness criterion. Male clients from both economic populations perceived as effective those male counselors who expressed characteristics associated with the popular American masculine stereotype and those female counselors who showed characteristics associated with the popular American feminine stereotype. The specification equations of the Institute for Personality and Ability Testing, one for each sex applied to the results of the 16 PF, provide a practical screening device for predicting counselor effectiveness with both economically disadvantaged and advantaged male clients. (21 ref)

SUBJECT TERMS: EDUCATIONAL COUNSELING, COUNSELOR CHARACTERISTICS, DISADVANTAGED, JUNIOR HIGH SCHOOL STUDENTS, HIGH SCHOOL STUDENTS, HUMAN MALES; 16060, 12100, 14370, 27220, 22930, 23400

INDEX PHRASE: counselor characteristics, counseling effectiveness, economically disadvantaged & advantaged males in junior & senior high schools

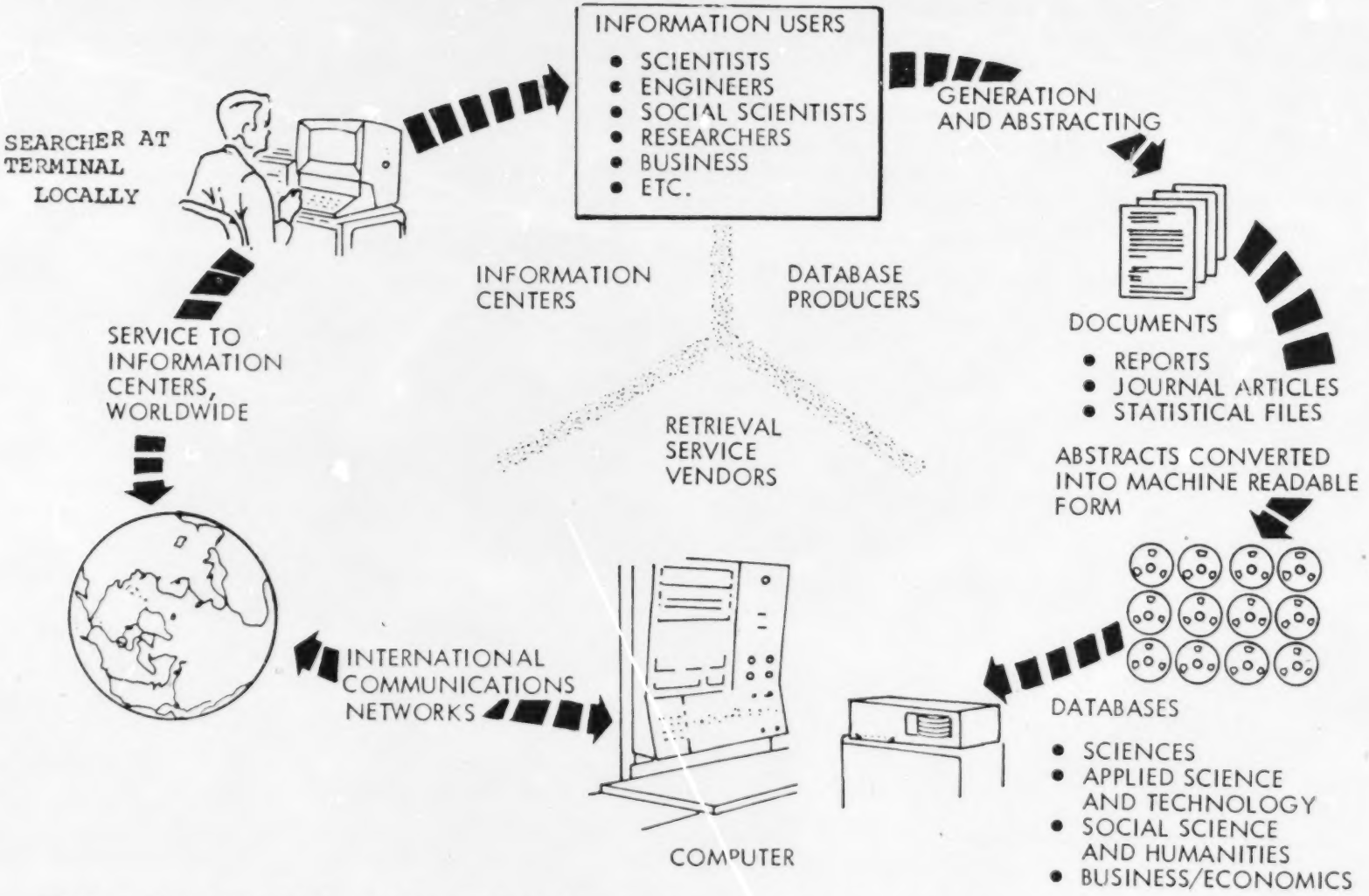
With this information, the requestor goes to the original article in Counselor & Supervision if the abstract interests her/him.

◀ PLEASE GO BACK AND REVIEW THIS SECTION IF YOU DO NOT SEE THE RELATIONSHIP BETWEEN PAPER INDEXES AND THEIR COUNTERPART ON-LINE. THE DIAGRAM ON PAGE 12 SHOULD HELP.

Location of the Databases

The machine readable records or tapes, duplicates of the printed indexes or abstracts, are sold to commercial companies like Lockheed Information Systems, Bibliographic Retrieval Services and System Development Corporation.

These companies or vendors write the programming needed to access the indexed information on the computer tapes and provide the computer storage necessary for accessing. Institutions, agencies, industries or individuals contract with these vendors for the opportunity to search the databases on the computer. Three of the most widely used services are those of the companies mentioned: Lockheed's DIALOG, BRS, SDC's ORBIT.



NOTE: This diagram is a pictorial representation of what has been covered in this section on "Choosing a database". This should help if you have difficulty in seeing the relationship between paper indexing systems and their computerized counterparts as well as the computerized information retrieval process.

Calling Up the Computer System

The databases or files which are searched for literature are stored on computer tape in California or New York, depending on contracting arrangements with a vendor. Only the computer for accessing the information on-line is available at the site, locally, where the search is being requested. The actual connection to the computer is made via a telephone hook-up or "dial-up" through telecommunications network systems. The rate for this service is far less costly than dialing up California or New York directly. The telecommunications networks have local installations in each state to dial-up.

The connection to the computer system is illustrated in the picture on the following page; a small, portable terminal is being used.

The searcher connected the unit to the power cord, turned on the terminal and "dialed-up" one of the telecommunications locations.

At the tone, the phone is coupled to the terminal and a series of directions given to the searcher by the computer including the command "enter your password". Each computer system user has been assigned a unique password that must be entered to begin a search.

Appropriate Databases for Your Search

To make your choice of the appropriate database(s) for your search, the ideal selection would be one based on your experience with the printed indexes that represent the databases; hopefully you would have had experience with these in doing research for other projects.

If you have not had any experience with these indexing systems, you can still share in making the wisest decision by:

1) Looking through the database information or catalog that may be available from the service where you are requesting your search. Familiarize yourself with those databases which concentrate on your subject area, not just as a possibility.

2) Taking some time to examine the printed counterpart of these databases. Use your search concepts or topics to explore these printed tools. Find some citations manually.

Searching more than one database may be desirable for your search topic, especially if you need an exhaustive search. Your contribution to the decision in database selection is important as well as the advice of the searcher who has had experience using various databases.

◀SELECT WHICH DATABASE YOU WOULD LIKE SEARCHED. EXPERIENCE YOURSELF WITH THAT DATABASE, WHEN YOU HAVE FINISHED THIS MATERIAL.

◀NOW GO ON TO PART IV.

IV. Defining the Research Problem

The searcher, before going on-line, will need a clear and concise description of your search problem. This information is needed to devise a strategy for doing the search.

Your definition of the topic to be searched, may be the most important step in the search process. The searcher, who will not always be as familiar with your topic as you, will base the search strategy on your interpretation. The computer, in turn, responds to this strategy; it does not make any assumptions and cannot question the commands given. Therefore, you must be precise, at this point, if you want useful results.

A "Search Topic Form" was given to you along with this material. This form should be completed as you read through this section. The form will help you clarify your topic and will serve as the basis for the search interview.

Recognizing Concepts

You should focus on your topic in the three forms suggested on the "Search Topic Form".

1) Title: This is the most concise form of definition for your topic. The title should convey the key concepts of your search problem.

Example: The influence of student mobility on the reading achievement of elementary school students.

NOT The effects of moving on ability to perform in school.

2) Narrative: In natural language, in a few sentences, describe your topic and include the population or level you are concerned with, any time limits and all of the concepts assumed in your topic.

SHOULD BE There are many students who transfer from elementary school to elementary school in short periods of time. What are the effects of this student mobility on the achievement level of these students? Some students transfer a great deal within school districts.

NOT Students who move around a lot do not do well in school. How does all this moving affect their grades?

3) Key Words: Set up your problem in terms of key words or concepts; the search strategy uses these concepts to represent your topic on-line, not sentences, phrases or questions. Separate your major concepts and group related terms below each in separate columns. The combination of these conceptual groups form the basic core of the on-line search strategy.

Example:

A TRANSFER STUDENTS	B ACHIEVEMENT	C ELEMENTARY
School Transfers	Progress	Elem. Education
Student Mobility	Performance	Third Graders
Transients	Failure	Primary Grades

Combinations: All of A
All of B
All of C
A and B and C

It is also important for you to indicate what you don't need as well as need (4). . . . i.e., not Secondary Education.

You may also want to limit the output or citations to a certain time period (6). . . .i.e., since 1976 when you had already completed a search. You can also limit to a language (7), since many databases are indexing international materials. Finally, some researchers limit the output to certain types of documents, e.g. articles, proceedings, bibliographies. Please indicate in item 8 if you would like this kind of limitation imposed on your topic.

Using a Thesaurus

Some of the databases make available a controlled vocabulary list or thesaurus of terms searchable in that database. Before going on-line, the searcher will check with these word lists or a thesaurus to insure that your search terms are appropriate for searching. This will be done with you during the interview.

The excerpts below are examples of terms from the ERIC database thesaurus. They suggest a number of search terms or descriptors to represent concepts of "Transfers", "Achievement".

TRANSFERS Jul 1966
NT Teacher Transfer
RT Credits
Educational Mobility
Free Choice Transfer Programs
Relocation
School Holding Power
Student Mobility
Students
Transfer Policy
Transfer Programs
Transfer Students
Transient Children

TRANSFER STUDENTS Jul 1966
UF Incoming Transfer Students
School Transfers
Student Transfers
BT Students
RT Free Choice Transfer Programs
Terminal Students
Transfers

Transformational Grammar
USE TRANSFORMATION GENERATIVE GRAMMAR

ACHIEVEMENT Jul 1966
UF Achievement Level
Student Progress
NT Academic Achievement
Graduation
Knowledge Level
Language Learning Levels
Negro Achievement
Reading Achievement
Reading Level
RT Ability
Achievement Gains
Achievement Rating
Achievement Tests
Aptitude
Aspiration
Failure Factors
High Achievers
Low Achievers
Overachievers
Performance
Productivity
Progressive Retardation
Report Cards
Success Factors
Teacher Influence
Underachievers

If a thesaurus is available in the database you want to search, you should use it to help formulate your search problem, particularly to select key words or concepts. Remember, these concepts form the core of the search strategy and they are most expertly chosen by you.

◀YOUR "SEARCH TOPIC FORM" SHOULD BE COMPLETED NOW AND MUST BE COMPLETED BEFORE THE INTERVIEW.

All of the steps thus far have involved activities that are performed off-line (off the computer) in preparation for the on-line searching activity. The next step in the process should be the search interview. However, to facilitate the flow of the interview, there is still some information to be covered regarding the search strategy and search details.

◀PLEASE CONTINUE.

V. The Search Strategy

Every search that is performed on-line is an interactive process between the searcher and a computer system. There is no one way to formulate this interaction or search strategy. Several different strategies performed on the same concepts by different searchers will produce essentially the same basic output.

There is only one way to analyze and set up the search topic, however. The topic must be expressed as a number of separate concepts or facets. In order to perform the on-line search, these concepts are combined and manipulated

by using Boolean logic. Before reviewing the sample of an actual search it is important to explain the Boolean operators which instruct the computer in logical fashion.

Boolean Logic

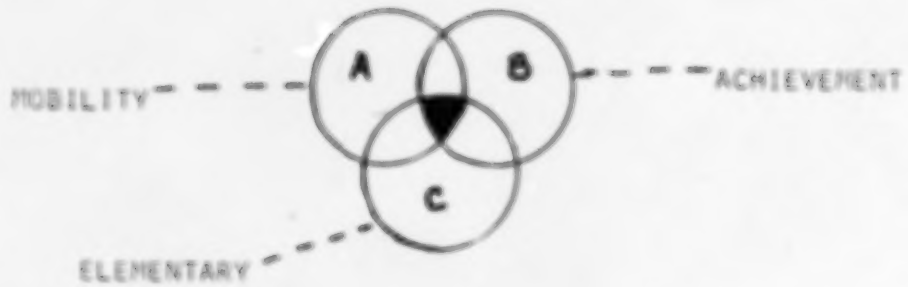
The three basic concepts of Boolean logic, used in computerized searching, are not difficult to understand. All combinations of concepts are based on these three operators: "AND", "OR", "NOT". The basic commands or instructions given to the computer will use these operators to show relationships between concepts in a search topic.

In order to illustrate the performance of Boolean operators, we will examine the topic defined earlier and used for the search sample (Part V). "The Effects of Student Mobility on the Achievement Level of Elementary School Students".

We divided the topic into conceptual groups of synonymous terms:

A	B	C
Transfer Students	Achievement	Elementary Education
School Transfers	Progress	Primary Grades
Student Mobility	Performance	Third Graders

The three groups are represented by circles below; the area of overlap or intersection (shaded) would be those documents or records in the database which contain all three concepts, mobility, achievement, elementary. That relationship is the desired outcome, the final "batch" that would be printed for this topic. If only information on transfers at the elementary level were needed, the intersection would be A and C.



The Boolean operators are applied to these conceptual groups, on-line, through a series of statements that "select" and "combine" in a logical fashion.

- The like terms in each group are selected or called up as a "set" and set aside to be combined later on with the Boolean operators. The computer would sort through all the thousands of citations in a database, storing all those that dealt with

  transfer students as Set 1
  school transfers as Set 2
  student mobility as Set 3

  These are combined by the use of the Boolean "OR" operator to produce one complete set of citations for that conceptual group, A, eliminating duplication of citations that may have been included under more than one like term. The complete set for the first group of like terms would be

  "Combine 1-3/ OR" which becomes Set 4

  Set 4 is set aside for now.

- The same type of statements are made for each of the two other conceptual groups so that we will eventually arrive at two other complete sets.

B	C
Achievement - Set 5	Elem. Education - Set 9
Progress - Set 6	Primary Grades - Set 10
Performance - Set 7	Third Graders - Set 11
----	----
"Combine 5-7/ OR" Set 8	"Combine 9-11/ OR" Set 12

- The combination of each of the complete sets which were set aside, is then performed with the AND operator.

  "Combine Set 4 AND 8 AND 12"

  for the final statement that will produce the final "batch" of citations on transfers and achievement at the elementary level.

These operations are done in a matter of seconds by the computer. This is the advantage of using the computer to search, versus manual searching of topics with several conceptual elements.

The "NOT" operator is imposed when the requestor does not want particular information. For example, "Elementary Secondary Education" is a descriptor in the ERIC system. If this search were performed in that database, the "NOT" command could be used to eliminate that "Secondary Education" level from the postings.

Search Sample

For the search sample we will analyze a briefsearch based on the topic discussed earlier in "Defining the research problem". The goal is to retrieve references to articles and documents on

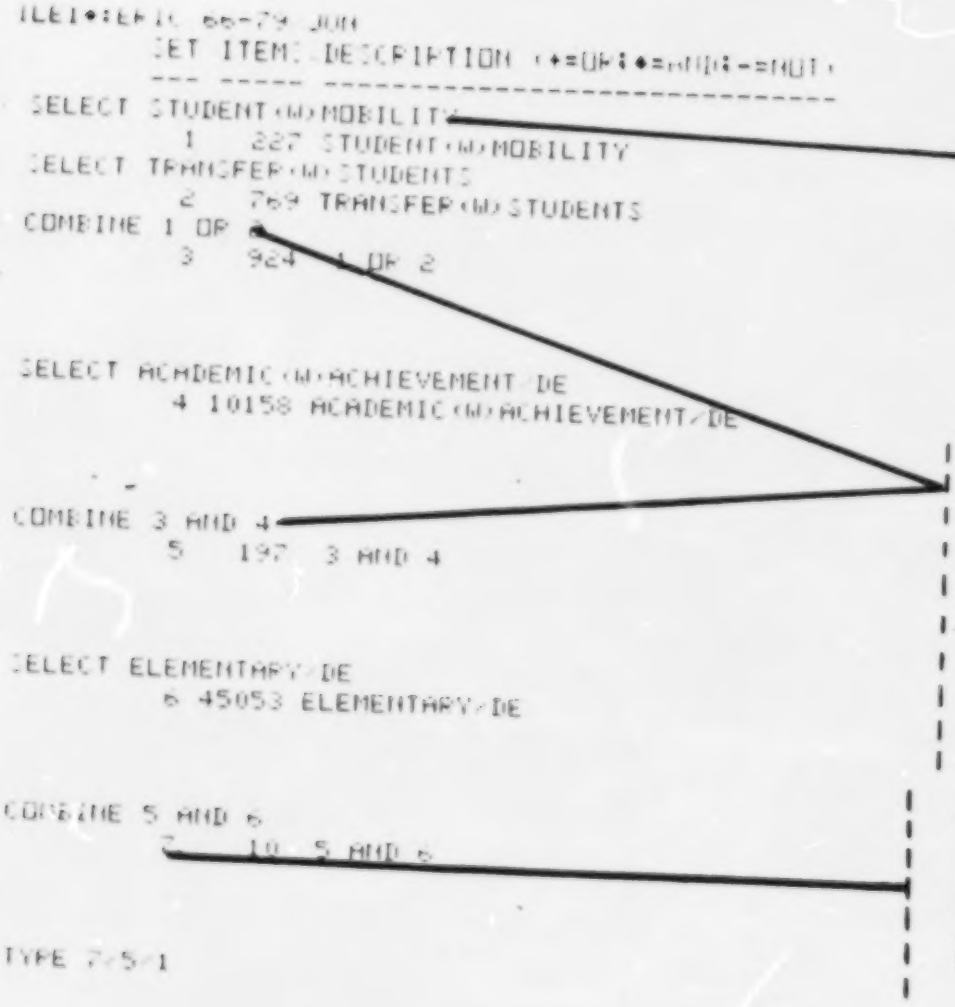
> THE EFFECTS OF STUDENT MOBILITY ON THE ACHIEVEMENT LEVEL OF ELEMENTARY SCHOOL STUDENTS

The search was run in File 1, ERIC, which is the educational resources database. The computer responds to the commands or instructions entered by the searcher once the password is accepted and the interaction begun.

The explanations of the search statements and the responses can be found alongside each of the actions:

◀IF THE SEARCH STRATEGY IS NOT CLEAR THE FIRST TIME, GO OVER IT A SECOND TIME. IF YOU HAVE ANY QUESTIONS ABOUT THE STRATEGY, PLEASE ASK THEM AT THE INTERVIEW.

◀CONTINUE WITH PART VI AFTER YOU HAVE ANALYZED THE SEARCH SAMPLE.



SELECT command directs the computer to select from all the records in the database, the specified term "student mobility"; the term could be located in the title, abstract or descriptors. Two hundred and twenty-seven references were identified as "set 1".

COMBINE "OR" command places the like terms, which were selected separately, into one larger set of 924 to eliminate duplication of references.

COMBINE "AND" joins these documents in which two of the basic unlike concepts are mentioned--achievement, transfers--197 records.

The final combination in "set 7" has produced ten documents that contain all three concepts--transfer, achievement, elementary. The TYPE command gives the searcher the opportunity to see if the output is relevant by looking at some of the records on-line.

```
?/5/1
ED161682  TM007150
  TECHNICAL REPORT OF THE CALIFORNIA ASSESSMENT PROGRAM.
  CALIFORNIA STATE DEPT. OF EDUCATION, SACRAMENTO. OFFICE OF PROGRAM
EVALUATION AND RESEARCH.
  77  218P.; FOR RELATED DOCUMENTS, SEE TM 007 148, 149, 151, AND 152
  AVAILABLE FROM: BUREAU OF PUBLICATIONS, CALIFORNIA STATE DEPARTMENT
OF EDUCATION, P.O. BOX 271, SACRAMENTO, CALIFORNIA 95802 (NO CHARGE
  EDRS PRICE MF-$0.83 PLUS POSTAGE. HC NOT AVAILABLE FROM EDRS.
  LANGUAGE: ENGLISH
  GEOGRAPHIC SOURCE: U.S.; CALIFORNIA
  GOVERNMENT: STATE
  THIS TECHNICAL REPORT DESCRIBES THE PROCEDURES FOLLOWED IN
DEVELOPING THE TESTS USED IN THE CALIFORNIA ASSESSMENT PROGRAM. THE
UNDERLYING PRINCIPLES OF THE PROGRAM, THE STATISTICAL CHARACTERISTICS
OF THE TESTS, AND THE EVIDENCE THAT HAS BEEN ACCUMULATED RELATING TO
THE VALIDITY AND RELIABILITY OF THE TESTS. THE REPORT ALSO PRESENTS
COMPLETE DESCRIPTIONS OF THE PROCESS OF COMPUTING THE SCORES AND
COMPARISON SCORE BANDS REPORTED ON THE 1974-75 AND 1975-76 REPORTS FOR
THE SCHOOLS AND SCHOOL DISTRICTS IN CALIFORNIA. BACKGROUND FACTORS
INCLUDED: PREVIOUS TEST SCORES, SOCIOECONOMIC INDEX, PERCENT
BILINGUAL, PERCENT IN AID TO FAMILIES WITH DEPENDENT CHILDREN,
PARENTAL EDUCATION, AND STUDENT MOBILITY. EXPLANATIONS ARE GIVEN FOR
THE STATISTICAL PROCEDURES THAT WERE USED. THE APPENDICES CONTAIN
CORRELATION MATRICES AND NORMS TABLES. (AUTHOR/CTM)
  DESCRIPTORS: ACADEMIC ACHIEVEMENT; ACHIEVEMENT TESTS; BASIC SKILLS;
ELEMENTARY SECONDARY EDUCATION; *NORMS; *PROGRAM DESCRIPTION; SCORES;
*STATE PROGRAMS; *STATISTICAL ANALYSIS; STUDENT CHARACTERISTICS;
STUDENT TESTING; TABLES (DATA); TEST CONSTRUCTION; *TESTING PROGRAMS;
*TEST INTERPRETATION; TEST RELIABILITY; TEST RESULTS; TEST VALIDITY
  IDENTIFIERS: CALIFORNIA; *CALIFORNIA ASSESSMENT PROGRAM

  PRINT 7/1 1O
PRINTED 7/1 1O
  LOGOFF

        19JUL79 15:22:51 USER8944
  $2.35   0.118 HRS FILE1, 7 DESCRIPTORS
  $0.44   TYMNET
  $0.24   5 PRINTS
  $4.13   ESTIMATED TOTAL COST

LOGOFF 15:22:54


C> DROPPED BY HOST SYSTEM
```

The full record (format 5) was printed on-line. This portion is the citation information--accession number, title, author, etc.

This is the abstract or summary of the document. Not all databases offer abstracts as part of their record.

Subject terms or descriptors are developed by database producers and assigned to identify the content of the documents. The controlled vocabulary is usually compiled into a thesaurus that can be used off-line to set up search strategy.

Since the ten items in set 7 are relevant, the searcher directs the system to "PRINT" the documents in set 7, format 1, the ten records or references located. They are printed off-line.

The system displays a summary of the search time and costs after a "LOGOFF" command.

VI. Search Details

Three other important items remain for your consideration: deciding the format of the output or citations you will receive, estimating the cost of your search and judging whether you can afford the turn-around time from search to receiving the information.

Print-out Formats

The format you select for your print-outs varies from database to database. Generally, the options range from simply printing accession numbers with no other information, to full records which have all the information available for the article or document, including an abstract. Since some databases, like Dissertation Abstracts, do not include abstracts in their record, they are not available in the print-outs off-line.

The following samples of print-out formats are from the ERIC database. The prices for full records range from $.10 - $.15 per; the price per record if only accession numbers or titles are printed are less but so is the information you have in hand when you get back the prints.

(Sample print-outs follow on the next page.)

Search Costs

The costs for computerized searching can be estimated by considering the basic service charges which may or may not exist, the costs incurred from the amount of time on the terminal to do your search and the costs for the prints off-line (discussed above).

Searches may average 10-15 minutes depending on the experience of the searcher. The average cost for using the database on-line is $1 per minute and $.10 per minute for the telecommunications hook-up. Higher costs occur when the searcher spends more time on the terminal for your search and when the number of print-outs increase. The more clear and concise your topic, the more efficient will the search be.

Time-Frame for Searching

You can estimate the turn-around time for your computer search from the following information.

ED161882

(Accession Number only)

ED161882 TM007150
Technical Report of the California Assessment Program.
California State Dept. of Education, Sacramento. Office of Program Evaluation and Research.
77 218p.; For related documents, see TM 007 143, 149, 151, and 152
Available from: Bureau of Publications, California State Department of Education, P.O. Box 271, Sacramento, California 95802 (no charge)
EDRS Price MF-$0.83 Plus Postage. HC Not Available from EDRS.
Language: English
Geographic Source: U.S./ California
Government: State
Descriptors: Academic Achievement/ Achievement Tests/ Basic Skills/ Elementary Secondary Education/ *Norms/ *Program Descriptions/ Scores/ *State Programs/ *Statistical Analysis/ Student Characteristics/ Student Testing/ Tables (Data)/ Test Construction/ *Testing Programs/ *Test Interpretation/ Test Reliability/ Test Results/ Test Validity
Identifiers: California/ *California Assessment Program

(Complete Record Except Abstract)

ED161882
Technical Report of the California Assessment Program. California State Dept. of Education, Sacramento. Office of Program Evaluation and Research. 218p.; For related documents, see TM 007 143, 149, 151, and 152 77
Bureau of Publications, California State Department of Education, P.O. Box 271, Sacramento, California 95802 (no charge)
EDRS Price MF-$0.83 Plus Postage. HC Not Available from EDRS.

(Bibliographic Citation)

ED161882
Technical Report of the California Assessment Program.

(Accession Number and Title)

ED161882 TM007150
Technical Report of the California Assessment Program.
California State Dept. of Education, Sacramento. Office of Program Evaluation and Research.
77 218p.; For related documents, see TM 007 143, 149, 151, and 152
Available from: Bureau of Publications, California State Department of Education, P.O. Box 271, Sacramento, California 95802 (no charge)
EDRS Price MF-$0.83 Plus Postage. HC Not Available from EDRS.
Language: English
Geographic Source: U.S./ California
Government: State
24
This technical report describes the procedures followed in developing the tests used in the California Assessment Program, the underlying principles of the program, the statistical characteristics of the tests, and the evidence that has been accumulated relating to the validity and reliability of the tests. The report also presents complete descriptions of the process of computing the scores and comparison score bands reported on the 1973-75 and 1975-76 reports for the schools and school districts in California. Background factors included: Previous test scores, socioeconomic index, percent bilingual, percent in Aid to Families with Dependent Children, parental education, and student mobility. Explanations are given for the statistical procedures that were used. The appendices contain correlation matrices and norms tables. (Author/CTM)
Descriptors: Academic Achievement/ Achievement Tests/ Basic Skills/ Elementary Secondary Education/ *Norms/ *Program Descriptions/ Scores/ *State Programs/ *Statistical Analysis/ Student Characteristics/ Student Testing/ Tables (Data)/ Test Construction/ *Testing Programs/ *Test Interpretation/ Test Reliability/ Test Results/ Test Validity
Identifiers: California/ *California Assessment Program

(Full Record)

7 days — You request an appointment for an interview. Setting a date and time will depend on the availability of the searcher; most requests have been handled within a week. During this time you are studying this orientation booklet.

3 days — You are interviewed for the search. Length of time for the interviews have ranged from 30 minutes to 90 minutes. With the addition of this orientation material this time should be reduced to an average of 30 minutes. Your search is performed within three days of the interview.

7 days — You can request that the titles or records located for your topic be printed on-line. If this number is large, at an average cost of $1 per minute for computer time, this could be very expensive, versus the average of $.10 per record printed off-line. Normally print-outs are ordered printed off-line and returned within five to seven working days.

The turn-around time from making your appointment to receiving your prints is approximately two and one-half weeks, barring any considerable difficulty with the computer system.

Getting the Documents, Articles

The off-line prints you receive will vary in the amount of information included according to the type of format you selected for the prints and what each of the databases offers in their records. Those databases which provide full records, including abstracts, make document retrieval a little easier.

The best way to proceed in this final lap of the computer search is to:

1. Review the print-outs which you received as a result of the search. Some of the citations will be "direct hits", some marginally relevant, some not relevant at all.

2. Select those citations which describe documents or articles you may want to search in the original form. If abstracts are provided in the record, this is easily done by reading the abstract and making a judgement. If there are no abstracts provided in the record (like Dissertation Abstracts) you may have to locate the abstracting journal for the printed counterpart of the database, read the abstract, then go to the original document if desired.

VII. Review

◀THIS SECTION MUST BE COMPLETED BEFORE YOUR APPOINTMENT FOR A SEARCH INTERVIEW.

If you do not understand any of the questions, please go back through the appropriate section as indicated below the question.

Some of these questions will be asked directly, during the interview, others have been answered already as you proceeded through the material.

1) Is a computer search appropriate at this point in your research?
(Page 1, 2, 4)

2) Could the research be completed, just as effectively, by your doing manual searching?
(Page 4-6)

3) What type of search do you need?
Current. . .retrospective
Brief. . . .comprehensive
(Page 6, 7)

4) Which database(s) would you like to search on-line?
(Page 7-15)

5) What sources have you consulted already, manually?
(Page 12)

6) Can you define your research problem clearly and concisely considering. . .population
level
time limits
the topic as separate concepts?
(Page 15-17)

7) Are you familiar with the thesaurus or index of terms for the database(s) you would like searched? Did you use the thesaurus to formulate your search problem?
(Page 17, 18)

8) Are you familiar with the actual on-line search strategy?
(Page 19-22)

9) Do you know which formats to select for the print-outs in the database(s) you have selected?
(Page 23,24)

10) Can you approximate the cost of your search?
(Page 23, 25)

11) Are you aware of the time-frame for making the search request and receiving the off-line prints?
(Page 23, 26)

NOTE: If you have had <u>extensive experience</u> with computer searching reviewing these questions may be sufficient preparation for you for the interview. <u>You must</u>, however, also <u>complete the "Search Topic Form"</u> included with this material. The interview will be based on the information you provide.

APPENDIX

Indexing and Abstracting Sources*

Current Index to Journals in Education (CIJE) covers approximately 700 journals in education, published monthly since 1969. The subject index is based on the ERIC subject terms or descriptors. Six-digit "EJ" numbers are assigned to each entry which is annotated in the Main Entry section of the Index.

....Monthly annotated journal, yearly indexes....

Dissertation Abstracts International abstracts dissertations from American, Canadian and foreign universities under two sections, section A covering the Humanities and Social Sciences. Every dissertation is entered in the system by the keywords in the title, i.e. declining enrollment (in the title of a dissertation) is located by looking up declining separately or enrollment separately.

....Monthly abstracting journal, yearly indexes....

Historical Abstracts is an abstracting and indexing system to the world's literature in history and related social sciences and humanities as found in some 2000 journals. World history from 1450 to present is covered. America: History and Life abstracts and indexes literature on United States and Canadian history.

....Both quarterly updates, yearly indexes....

Language and Language Behavior Abstracts articles are indexed from approximately 1000 domestic and foreign language journals, particularly in the area of the nature and use of language.

....Quarterly abstracting journal, yearly indexes....

---

*A few suggestions; check the library for other indexing and abstracting sources in your field.

Philosopher's Index contains abstracts and bibliographic information on philosophy drawn from approximately 270 journals of philosophy and related fields and books published since 1940.

....Quarterly updates, yearly indexes....

Psychological Abstracts covers the world's literature in psychology and related disciplines in the behavioral sciences such as education, sociology. Approximately 900 periodicals, and other materials such as books, dissertations and technical reports are scanned for research.

....Monthly abstracting journal, yearly indexes....

Public Affairs Information Service Bulletin indexes over 800 English language journals and 6000 non-serial publications dealing with political science, economics, public policy sociology, social welfare and other fields of the social sciences.

....Quarterly updates, yearly indexes....

Research in Education (ERIC) is a microfiche system which identifies educational research, reports, projects, etc. The microfiche collection is available at 650 locations in the U. S. but most items can be purchased in paper copy form as well. Documents are assigned "ED" six-digit numbers and entered in the system by a controlled vocabulary of subject terms or descriptors.

....Monthly abstracting journal, yearly updates....

Social Science Citation Index indexes the literature of some 1400 international social science journals in a unique and very important form. In addition to searching by author, subject terms, etc., the literature can be searched by author's cited references in the bibliography, to others who would obviously have some relationship to the research area of the author who is citing.

....Monthly updates, yearly indexes....

Sociological Abstracts covers the literature in sociology and related disciplines from 1200 domestic and foreign journals and other serial publications.

....Five updates per year, yearly indexes....

SEARCH TOPIC FORM

(See Section IV, page 15)

REQUESTOR_____

1. TITLE (Be concise yet include all of your major concepts.)

_____

_____

2. NARRATIVE (Include population, time-frame, all major concepts.)

_____

_____

_____

_____

3. KEY WORDS OR CONCEPTS (List related terms below each.)

Concept A B C D

4. Information related to your topic that you DO NOT WANT.

_____

_____

5. Two references with titles, authors, descriptors if available, that you found most useful.

_____

_____

_____

_____

_____

6. Limit the output to these dates: _____

_____

7. Limit the output to this language: _____

_____

8. Limit the output to certain document types: _____

_____